

REMARKS

The present Response is intended to be fully responsive to all points of objections and/or rejections raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Applicant asserts that the present invention is new, non-obvious and useful. Prompt reconsideration and allowance of the claims are respectfully requested.

Status of the Claims

Claims 8 and 10-12 are pending in the application.

Remarks to Claim Rejections

Claim Rejections - 35 USC §103

In the Office Action, the Examiner rejected claims 8 and 10-12 under 35 U.S.C. 103(a) as being unpatentable over Lee (US 6,228,763B1) in view of Zhao (US 6,211,561 B1) and Chiang et al. (US 5,817,572).

Applicants respectfully disagree with the Examiner's rejections.

Applicants respectfully submit that the Examiner's rejections of claims 8 and 10-12 do not meet the basic criteria of MPEP 2143 for establishing a *prima facie* case of obviousness, which require "First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations".

In the Office Action, the Examiner alleges that "it would have been obvious within the scope of one of ordinary skill in the art to combine the teachings of Lee and Zhao with Chiang ..." (p.4, lines 4-5). Applicants respectfully disagree.

Chiang describes an interconnect structure that neither resembles nor bears any similarities to that of Lee and Zhao, and to the wiring structure of the present invention. Specifically, the structure described by Chiang does not include (as evident from Figs.4 and 25 being cited by the Examiner) a plurality of conductors (disposed on a first dielectric layer) that are laterally separated from each other by air gaps and by portions of the first dielectric layer and portions of a second dielectric layer. Because the structure disclosed by Chiang neither resembles nor bears any similarities to that of Lee and Zhao, Applicants respectfully submit that it is NOT within the scope of one of ordinary skill to combine them. In addition, neither Chiang nor Lee and Zhao provides any description or teaching about how to combine Chiang and that of Lee and Zhao, involving two different structures with different processing procedures, to produce the wiring structure of present invention as specifically required by independent claim 8 of present invention.

Furthermore, Applicants would like to point out that Lee describes a process of using an anti-reflective coating (ARC) layer 302 on top of dielectric layer 300 to improve the photolithographic ability. For that purpose, layers 302 and 300 of Lee may not be made with a single layer of dielectric material. In other words, Lee teaches away from using a single dielectric layer, whether it be dielectric layer 22, 23, 322, or 323 (Figs. 4 and 25 of Chiang), to replace layers 302 and 300, which the Examiner collectively alleges as the “first dielectric layer”. On the other hand, Chiang does not teach or suggest any processes that use an ARC layer. Thus, contrary to the allegation made by the Examiner, Applicants respectfully submit that Chiang cannot be combined with Lee and Zhao to make the “first dielectric layer”, which includes layers 302 and 300, using dielectric materials disclosed by Chiang.

Because the structure of Chiang is not compatible and therefore not combinable with that of Lee and Zhao in view of above, Applicants respectfully submit that there is no motivation for a person of ordinary skill to combine Chiang with Lee and Zhao.

Notwithstanding the above discussed non-compatibility (both in terms structures and in terms processes of making the same) between Chiang and that of Lee and Zhao, in case the Examiner still contends that Chiang is combinable with Lee and Zhao in that layer 300 alone may be made with materials disclosed by Chiang, Applicants respectfully

submit that this particular combination of Lee, Zhao, and Chiang does not cure the deficiency of teaching the alleged first dielectric layer (including both layer 302 and layer 300) having a dielectric constant less than that of the alleged second dielectric layer 306, as specifically required by independent claim 8.

Secondly, Applicants respectfully submit that the Examiner failed to demonstrate reasonable expectations of success even if Chiang is being combined with that of Lee and Zhao (despite the fact that they cannot be combined as is discussed above). Neither of the references, particularly Lee, Zhao, and Chiang, teaches about how to select a dielectric material for a particular layer, nor any of them describes at all or even mentions about dielectric constant of the material and their importance in forming the claimed wiring structure of the present invention. It is highly doubtful that a person of ordinary skill, by randomly selecting from a long list of possible dielectric materials having a wide range of dielectric constant, will be able to construct with reasonable expectation of success a wiring structure that has the particular dielectric constant combination among different dielectric layers, which is specifically required by independent claim 8 of the present invention. The unexpected results of reducing fringing fields with the particular wiring structure as claimed by the present invention was never taught, suggested, or implied by prior art references of record, in particular, by Lee, Zhao, and Chiang.

Thirdly, Applicants respectfully submit that the Examiner failed to demonstrate that prior art references Lee, Zhao, and Chiang, alone or in combination, teach each and every claim elements of the present invention. For example, independent claim 8 of the present invention specifically requires that “said first dielectric layer and said third dielectric layer each have a dielectric constant less than that of the second dielectric layer”. None of the prior art references teaches or suggests the relative relationship between dielectric constants of the different dielectric layers. In fact, all of the prior art references failed to describe the importance of dielectric constant, in the wiring structure of the present invention, in producing the unexpected results of reducing fringing fields as is discovered and disclosed by the present invention.

In view of the above, Applicants respectfully submit that independent claim 8 of the present invention includes distinctive elements that are not taught, suggested, or even

implied by prior art references of record, in particular by Lee, Zhao, and Chiang, alone or in combination, and therefore is patentable.

Claims 10-12 depend directly from independent claim 8, and thus include all the distinctive elements of claim 8 in addition to other distinguishing features. Therefore, claims 10-12 are patentable for at least the reasons as described above with regard to claim 8.

In view of above, Applicants respectfully request that rejections of claims 8 and 10-12 under 35 U.S.C. §103(a) be withdrawn.

Conclusion

In view of the preceding remarks, Applicants respectfully submit that all pending claims are now in condition for allowance. Favorable reconsideration and allowance of the claims are respectfully requested.

No fees are believed to be due in connection with this paper. However, if there is any such fee due, please charge any such fee to the deposit account No. 09-0458.

Respectfully submitted,



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